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# Household savings, financing and economic growth in South Africa

**Itumeleng Pleasure Mongale, Tumelo Mashamaite, Nyiko Khoza**

*Faculty of Management and Law, University of Limpopo, South Africa*

*corresponding e-mail: [itumeleng\(dot\)mongale\[at\]ul\(dot\)ac{dot}za](mailto:itumeleng(dot)mongale[at]ul(dot)ac{dot}za)*

*address: Itumeleng Pleasure Mongale, Private Bag X1106, Sovenga, 0727*

**Abstract:** The South African economy is characterised by low levels of household savings which play a very crucial role in stimulating sustained economic growth. At the same time consumers borrow in order to consume. The paper intends to investigate the impact of household savings and financing on economic growth in South Africa. The study is envisaged to assist monetary authorities and policy makers to mitigate this problem. An annual time series data covering the period from 1980 to 2014 is analysed by means of the Vector Error Correction Model approach. The Johansen Cointegration test results confirmed the existence of a long run relationship amongst variables under investigations. Moreover, the results suggest that financing, namely; credit extensions and leasing finance have positive relationships with the country's economic growth while household savings indicate a negative relationship with growth. That being the case, the recommendation is that since it has been established by other studies that a rapid increase in credit is not commonly perceived to be one of the leading indicators of financial instability, policymakers are advised to consider imposing stringent credit control measures so that the demand for financing can be kept under control.

**JEL Classifications:** C01, C22, D14, F43

**Keywords:** Household savings, credit extensions, leasing finance, VECM, South Africa

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## 1. Introduction

Households are the backbone of any economy. This is not different in South Africa because their consumption account for about 60% of the gross domestic product (GDP) (World Bank, 2016). However, the recent past has been characterised by significant economic impacts on households. In particular, the financial health of households has been affected in many ways, including a decrease in household savings, increase in household debt through massive financing in the form of credit extensions and leasing finance thus a decrease in economic growth. On the other side, developing countries such as China and India have over the years developed cultures of savings that have proved to be beneficial to their economic growth. In 2014 the gross domestic savings in China were estimated at 49% of the GDP and in India it was around 22% (World Bank, 2016). The high savings rate shows how Indians are serious about wealth creation and long term commitments (Chauke, 2011). In addition, Mahlo (2011) stresses that household savings are an important instrument for any economy and can be a crucial determinant of welfare in developing countries.

According to Amusa (2014), for a country like South Africa, where the level of domestic saving is low, the question of the role of household or domestic savings in economic growth becomes critical. The literature on savings generally concedes that low domestic savings rates are detrimental to growth since it acts as a constraint to investment. This is

based on the notion that poor savings will translate to declining levels of both public and private investments, thus affecting the economic growth of a country.

The spending and savings behaviour of the community is determined by various factors such as the material and social needs people have, tradition, the standard of living and the age distribution of the population (Van De Walt & Prinsloo, 1995). Over the years, South African consumers have accumulated more debt than savings, because they normally borrow in order to consume which has cultivated a culture of dissaving (Mahlo, 2011). The rapid increase in household debt is further worsened by the fact that debt has become more easily available to average South Africans at interest rates that are relatively low (Chauke, 2011).

Domestic savings are essential for attaining a sustained level of economic growth and play a crucial role in promoting strong and sustained economic growth if channelled towards profitable, sound and appropriate investment opportunities (Amusa & Moyo, 2013). In comparison with other emerging markets, South Africa's savings rate is considered to be relatively low (Amusa, 2014). According to Aron & Muelbauer (2000), such low levels of national savings contribute to increases in resource constraint pressures and impede investments that can potentially enhance growth.

Access to credit is critical to businesses and individuals. This is because access to financing is crucial to their survival, sustainability, growth and ultimately to a country's economic growth, employment and asset formation. At the same time the development of leasing should be achieved by carrying out interventions on the suppliers of leasing in order to provide a favourable environment for leasing provision and to stimulate demand for the financial product. This conforms to the supply-leading hypothesis, which suggests that financial development stimulates economic growth (Aloysius & Lubinda, 2013). Bello et al. (2016) revealed that lease financing has significant impact on the return of assets of oil and gas companies in Nigeria. Based on that, they recommend that firms should embrace lease financing as a method of financing their operations as evidence suggests that value is added through the use of lease financing.

In a nutshell, South Africa is experiencing low levels of economic growth coupled with low levels of household savings. Also, the demand for credit is high and many individuals find themselves being heavily indebted and have difficulties financing their debt. It is believed that this might be because individuals have relatively easy access to credit which makes it hard for them to put money aside for savings. Therefore, there is a need to investigate the impact of household savings and financing on economic growth in order to assist monetary authorities to come up with suitable policies to mitigate the problem. This will also help the household sector and policy makers to make informed financial decisions. The nobility of this paper is to focus on household savings and increase in household debt through massive financing in the form of credit extensions and leasing finance in South Africa. The paper is organised as follows: section 2 is a review of literature; section 3 covers research methodology. Section 4 presents empirical results and section 5 concludes the paper.

## 2. Literature review

The purpose of this section is to review previous studies in order to gain more knowledge about the impact of household savings and credit extensions on economic growth by focusing on the theoretical framework and empirical literature to the study.

## 2.1. Theoretical framework

In most cases the discussion around household savings is often grounded on Permanent Income and Life Cycle Hypotheses (PIH). It links an individual's consumption at any point in time to that of their total income earned over their lifetime (Chao, 2000). The hypothesis is based on two simple postulates; that individuals wish to equate their marginal utility consumption across and that they are able to respond to income changes by saving and dissaving (Aguilar & Hurst, 2007). Given the permanent and transitory components of an individual's income, it would be reasonable to assume that individuals would wish to smooth consumption rather than let it fluctuate with transitory increases in income. Friedman's key conclusion is that transitory changes in income level will have a low impact on an individual's spending behaviour (Cronje, 2009). Furthermore, De Juan & Seater (2006) assert that PIH has many powerful implications, one of which is that the elasticity of consumption with respect to current income should vary systematically with the degree of permanence in the changes to households' income.

Similarly, Franco Modigliani's Life Cycle Hypothesis (LCH) developed in the early 1950s emphasises that people make intelligent choices about how much they want to spend at different stages, limited by the resources available over their lives (Deaton, 2005). Dwivedi (2010) emphasises that this enhances the principle of utility maximisations and Saad (2011) further explains that theory revolves around the fact that consumption is dependent on current income and net wealth. The LCH emphasises the idea that savings play a vital role in smoothing out consumption over the entire life of an individual (Chipote & Tseyage, 2014).

Factors such as demographics and income growth play a significant role in explaining saving patterns throughout the lifetime of an individual. Chipote & Tseyage (2014) explain that the LCH proposes a hump-shaped saving pattern whereby the early and later stages of life are associated with dissaving and the middle stage is characterized by savings. In addition, Cronje (2009) maintains that the LCH predicts that in a given population, younger people will not save enough given that their initial low earning capacity will result in their borrowing to meet their high consumption needs.

Based on the Keynesian school of thought, Browning & Lusardi (1996) reproduced the following motives that were suggested as factors that could influence a household's decision to save: to build up a reserve against unforeseen contingencies; to provide for an anticipated future relationship between the income and the needs of the individual; to enjoy interest and appreciation; to enjoy a gradually increasing expenditure; to enjoy a sense of independence and the power to do things, though without a clear idea or definite intention of specific action; to bequeath a fortune; to satisfy pure miserliness and to accumulate deposits to buy houses, cars and other durables.

## 2.2. Empirical literature

In line with the theories related to savings, Prinsloo (2000) indicate that savings in a country could be the amount of resources or income produced in the economy in a given year that is not consumed immediately but is put to use in a good way that will provide returns to the economy in years to come. This imply that the low levels of savings, prolonged over an extended period of time, may entrap a country into a vicious cycle of low investments, low economic growth and low real per capita income (Odhiambo, 2007).

One of the major contributors to low levels of savings is household debt (Barba & Pivetti, 2009). South Africa's household debt continues to grow rapidly as credit extension continues to be on the rise (Mutezo, 2014). Therefore, Chauke (2011) indicates that many South Africans have difficulty servicing their debt which makes it even more difficult for them to save. The need for instant gratification and materialism has ultimately burdened South Africans and also forced them to increase their debt levels. The aggregate household debt has continued to accelerate over the past two decades predominantly among black middle class (Cronje & Roux, 2010). This has mainly been fuelled by the availability of credit which makes it easier for households to spend even when they do not have funds to make those purchases. Such an increase in the availability of credit at relatively low interest rates entice consumers to make purchase now instead of saving money and making it later (Van De Walt et al., 1995).

The availability of credit affords consumers the opportunity to make use or acquire ownership of an item or resource today and defer payment for a later date therefore it plays a major role in the financial empowerment of consumers (De Wet, Botha, & Booysen, 2015). In the same vein, Sithebe (2014) argues that the strong demand for credit in the mid-1990s was driven by the introduction of private-label credit cards, the introduction of mortgage equity withdrawals as well as the exponential growth of the micro-lending industry. Households were also exposed to credit by means of personal loans, overdraft facilities, credit cards and instalment sales or lease agreements (Cronje, 2009).

According to Harris & Laisbon (2001), individuals desire fulfilment in the present more than consumption in the foreseeable future. The majority of middle class black South Africans feel the urge to acquire credit to buy goods such as vehicles to symbolise their new-found wealth (Chauke, 2011). The availability of credit raises major concerns regarding consumers being highly indebted making them vulnerable to becoming over-indebted (Botha, De Wet, & Booysens, 2015). Hence, it is debatable that, on the one hand, credit extension enables spending which has a positive effect on GDP. On the other hand, high levels of credit growth can subdue growth if household debt negatively affects saving and spending. However, is clear from recent global and domestic events that excessive credit that leads to over-indebtedness has significant negative effects on economic performance. This implies that a lower credit growth environment is likely to be more sustainable.

### 3. Research method

The paper employed the VECM approach to investigate the impact of household savings and credit extension on economic growth.

#### 3.1. Data and model specification

The study uses an annual time series data obtained from the South African Reserve Bank covering the period from 1980 to 2014. The empirical model is specified as follows:

$$GDP_t = \beta + \beta_1 LS_t + \beta_2 HS_t + \beta_3 CE_t + \varepsilon_t \quad (1)$$

where *GDP* - Gross Domestic Product; *LS* - Leasing Finance; *HS* - Household Savings; *CE* - Credit Extensions;  $\beta$  - the constant and  $\varepsilon$  - error term.

### 3.2. Stationarity/Unit root test

Since model is made up of economic or financial variables, the analysis begins by examining their statistical properties. This will help to determine whether they are stationary or not so as to avoid spurious results which may be misleading (Asteriou & Hall, 2011). The Augmented Dickey-Fuller (ADF) unit root test will be conducted in order to examine whether a unit root is present or not in the time series. A variable that is not stationary at level can still be stationary at first or second difference. The decision rule for the two tests entails comparing *t*-statistics with their critical values and the study will accept the null hypothesis if  $t^* > \text{ADF critical values}$  (i.e. unit root exists). Reject the null hypothesis if  $t^* < \text{ADF critical values}$  (i.e. unit root does not exist).

### 3.3. The Johansen cointegration

The Johansen-Juselius maximum likelihood cointegration analysis will be employed to determine the presence of long run economic relationship amongst the variables by means of the Trace and Maximum Eigenvalue tests. The cointegration analysis is often used as a pre-requisite for determining whether a standard Vector autoregressive (VAR) or Vector Error Correction Model (VECM) should be employed to study the relationship between the variables. If the number of cointegrating variables is one, the Error Correction Model (ECM) will be suitable for the model. If the number of cointegrating variables is more than one, the Vector Error Correction model will be employed. Dunis & Ho (2005) indicated that the theory of cointegration provides a sound methodology for modelling both long run and short run dynamics in a system.

### 3.4. Vector error correction model

Hannan & Quinn (1979) described the VECM as a model which explains how the system is changing in each time period towards its long run equilibrium state. When variables are cointegrated, there must also be an ECM that will define the short run changes of the cointegrated variables. The corresponding VECM can be estimated once the number of cointegration vectors has been determined. VECM is a controlled VAR designed for use with nonstationary series that are found to be cointegrated. Naranjo & Tove's (2002) established that, the coefficient of the error-correction term derived from the cointegrating vectors represent the proportion by which the long run disequilibrium in the dependent variables is corrected in each short term period.

Hence, the VECM of the study is be expressed as follows:

$$GDP_t = \alpha_1 + \sum_{j=1}^p \alpha_j GDP_{t-j} + \sum_{j=1}^p \beta_j LS_{t-j} + \sum_{j=1}^p \chi_j HS_{t-j} + \sum_{j=1}^p \theta_j CE_{t-j} + \varepsilon_j \quad (2)$$

$$LS_t = \alpha_2 + \sum_{j=1}^p \eta_j GDP_{t-j} + \sum_{j=1}^p \phi_j LS_{t-j} + \sum_{j=1}^p \varphi_j HS_{t-j} + \sum_{j=1}^p \gamma_j CE_{t-j} + \varepsilon_j \quad (3)$$

$$HS_t = \alpha_3 + \sum_{j=1}^p \varpi_j GDP_{t-j} + \sum_{j=1}^p \kappa_j LS_{t-j} + \sum_{j=1}^p \rho_j HS_{t-j} + \sum_{j=1}^p \vartheta_j CE_{t-j} + \varepsilon_j \quad (4)$$

$$CE_t = \alpha_4 + \sum_{j=1}^p \lambda_j GDP_{t-j} + \sum_{j=1}^p \mu_j LS_{t-j} + \sum_{j=1}^p \sigma_j HS_{t-j} + \sum_{j=1}^p \psi_j CE_{t-j} + \varepsilon_j \quad (5)$$

### 3.5. Diagnostic tests

The paper will conduct diagnostic tests to ensure that the model estimates yield true results. It will start by conducting the Jarque-Bera test which helps to determine whether the residuals in the model are normally distributed (Gujarati & Porter, 2009). The Ljung-Box Q and the Breusch-Pagan tests will be conducted in order to establish whether autocorrelation exists in the model or not (Asteriou & Hall, 2011). Finally, the White (No Cross Terms) test for heteroskedasticity in the model will be conducted.

### 3.6. Stability test

In order to determine the steadiness of the model throughout the period of the study, the Ramsey RESET test will be performed. The main aim of performing this test is to ascertain that the error correction equation is correctly specified as an incorrect equation may lead to wrong functional forms and misspecifications that would give rise to a high  $R^2$  which will give misleading results.

## 4. Empirical results and discussion

### 4.1. Unit root test

The results of the ADF unit root test are presented in Tables 1 and 2. The ADF was tested at a 1%, 5% and 10% level of significance and is based on the trend and intercept and none. The results in Table 1 indicate that all the variables in the model are

nonstationary at level form because all the t-statistics and greater than the critical values and also the probability values are more than 0.05. They all appear to be stationary at first difference as indicated by the results presented in Table 2.

TABLE 1. UNIT ROOT TEST RESULTS ON VARIABLES AT LEVEL

Variables	Lag Length	t-statistic	ADF CONSTANT, LINEAR TREND			
			Critical values			P- value
			1%	5%	10%	
LGDP	0	-0.108919	-4.252879	-3.548490	-3.207094	0.9926
LHS	0	-1.651228	-4.252879	-3.548490	-3.207094	0.7507
LLF	1	-1.967780	-3.646342	-2.954021	-2.615817	0.2989
LISC	1	-2.444421	-4.262735	-3.552973	-3.209642	0.3516

TABLE 2. UNIT ROOT TEST RESULTS ON VARIABLES AT FIRST DIFFERENCE

ADF CONSTANT, LINEAR TREND							
Variables	Lag length	t-statistics	Critical values			P-value	Results
			1%	5%	10%		
LGDP	0	-4.298697	-4.262735	-3.552973	-3.209642	0.0092	I(1)
LHS	0	-5.562771	-4.262735	-3.552973	-3.209642	0.0004	I(1)
LLF	1	-2.229241	-2.639210	-1.951687	-3.610579	0.0269	I(1)
LISC	1	-4.719051	-4.273277	-3.557759	-3.212361	0.0034	I(1)

#### 4.2. Johansen cointegration test

The Johansen cointegration test results are based on both the trace and the maximum eigenvalue test and are presented in Table 3.

TABLE 3. JOHANSEN COINTEGRATION TESTS RESULTS

Tests	Hypothesized No. of CE	Eigenvalue	Trace/Max Eigen Statistics	0.05 Critical Value	Probabilities
Trace	None*	0.560443	60.27079	47.85613	0.0032
	At most 1*	0.440864	33.14518	29.79707	0.0198
	At most 2	0.344597	13.96018	15.49471	0.0840
	At most 3	0.000531	0.017532	3.841446	0.8945
Maximum Eigenvalue	None	0.560443	27.12561	27.58434	0.0571
	At most 1	0.440865	19.18501	21.13162	0.0916
	At most 2	0.344597	13.942655	14.26460	0.0561
	At most 3	0.000531	0.017532	3.841466	0.8945

Note: Trace test indicates 2 cointegrating eqn(s) at the 0.05 level. Max-eigenvalue test indicates no cointegration at the 0.05 level. \* - denotes rejection of the hypothesis at the 0.05 level.

Source: Own calculation with EViews 8.



TABLE 4. NORMALISED COINTEGRATING EQUATION

Variables	LGDP	LCE	LLF	LSH
Coefficients	1.000000	-0.782698	-0.126174	0.011698
Standard error		(0.04919)	(0.04145)	(0.00452)

The trace test indicates that there are two cointegrating equations at a 5% level of significance and the maximum eigenvalue shows no cointegration. The implication is that since at least one of the test has indicate the presence of cointegration, there is a presence of a long run economic relationship amongst the variables. From the estimates of the cointegrating relation based on the normalisation and also estimates of the adjustment parameter the normalised cointegrating coefficients. The signs of the long run estimates are shown in Table 4.

A normalised cointegrating equation based on Table 4 is therefore presented as equation 6 as:

$$LGDP + \alpha - 0.126174 LLF_t - 0.782698 LCE_t + 0.011698 LSH_t = 0 \quad (6)$$

In order to capture the long run relationship amongst the variables properly, Equation 6 is rearranged as follows:

$$LGDP_t = \alpha + 0.126174 LLF_t + 0.782698 LCE_t - 0.011698 LSH_t \quad (7)$$

Equation 7 implies that instalment sales credit and leasing finance display positive relationships with the country's LGDP whilst on the other hand household savings shows a negative relationship.

#### 4.3. Vector error correction model

The VECM results in Table 5 indicates that if there is any shock to the system about 4.3% of the disequilibrium in the model will be corrected in the next year.

TABLE 5. SUMMARY OF VECM TEST RESULTS

Error correction	D(LGDP)	D(LISC(-1))	D(LLF)	D(LSH)
CointEq 1	-0.043029	0.216012	0.622007	-0.800310
	(0.03402)	(0.11124)	(0.17312)	(6.92495)
	[-1.26498]	[-94178]	[3.59299]	[-0.07024]
R-squared	0.775061			
Adj. R-squared	0.0721075			

This is based on the fact that, as expected from theory, the cointegrating equation coefficient (-0.043029) has a negative value. The implication is that this system albeit at slower adjustment speed of 4.3%, will ultimately be able to come back to equilibrium.

#### 4.4. Diagnostic tests

Diagnostic tests results which were conducted to determine the quality of the model are presented in Table 6.

TABLE 6. DIAGNOSTIC TEST RESULTS

Test	H <sub>0</sub>	t-stat	P-value	Conclusion
Jarque-Bera	Residuals are normally distributed	2.143	0.342	Do not reject H <sub>0</sub> since PV> L.O.S. Residuals are normally distributed
Ljung-Box Q	No autocorrelation (No 6)	39.467	0.987	Reject H <sub>0</sub> since PV > L.O.S. No autocorrelation
Breusch-Godfrey	No serial correlation	12.565	0.719	Reject H <sub>0</sub> since PV > L.O.S. No serial correlation
Breusch Peagan Godfrey	No Heteroskedasticity	7.097	0.069	Do not reject H <sub>0</sub> since PV>L.O.S. No heteroskedasticity
White (NCT)	No Heteroskedasticity	7.275	0.964	Do not reject H <sub>0</sub> since PV> L.O.S. No heteroskedasticity

These results are tested based on 1%, 5% and 10% levels of significance. The Jarque-Bera test performed in this study indicates that the residuals of the regression are normally distributed in the model since the p-value of 34% is greater than all the three levels of significance. The Ljung-Box Q test of order (6), confirms that the model does not contain any autocorrelation problem, because the P-value of 47% exceeds all three levels of significance. The Breusch Godfrey test shows that there is no serial correlation in the model. The Breusch-Peagan Godfrey and White (with no cross terms) (NCT) tests revealed that the model is free from heteroskedasticity since all their P-values are greater than the three levels of significance.

#### 4.5. Stability tests

Table 7 shows the results of the Ramsey Reset Test. The results indicate that the model is correctly specified because the P-value of 0.35 is above all the three levels of significance. There is, therefore, insufficient evidence to reject the null hypothesis (H<sub>0</sub>) given that the model is correctly specified.

TABLE 7. STABILITY TEST RESULTS

Test	H <sub>0</sub>	t-statistic	P-value	Conclusion
Ramsey RESET	Equation is correctly specified	0.945	0.352	Do not reject H <sub>0</sub> since PV> L.O.S. Hence equation is correctly specified

## 5. Conclusions

The aim of the study was to analyse the relationship between household savings, credit extension and economic growth in South Africa. The ADF unit root test indicated that all variables are stationery at first difference and are therefore integrated of order one. The Johansen cointegration analysis confirmed the presence of a long run relationship among the variables. In addition, the analysis revealed that credit extensions and leasing finance have a positive relationship with the country's GDP while household savings has a negative relationship with economic growth. The VECM results indicated a very low level of the speed of adjustment of -4.3029% in the system implying that only 4% of disequilibrium in the model will be corrected within a year. The Ramsey RESET test indicates that the model is correctly specified.

The relationship displayed by credit extensions and leasing finance with GDP seem to be in line with what was highlighted by LCH as intelligent choices about how much people want to spend at different stages, limited by the resources available over their lives. This is in line with the notion that savings play a vital role in smoothing out consumption over the entire life of an individual. On the other hand, low levels of saving could mean that South Africans are likely not to benefit from the motives suggested by the Keynesian school of thought as factors that could influence a household's decision to save.

Based on the empirical evidence, the study recommends that the households should develop a culture of saving so that they do not have to depend on credit to make transactions. Likewise, the South African government through the National Credit Regulator should consider imposing stringent credit control measures so that the demand for credit can be kept under control. Such measures will ensure that consumers depend less on credit and cultivate a culture of saving which may result in greater access to and coverage of retirement benefits. The government can stimulate this culture by developing incentives that will entice households to save. This paper focused on a few casual variables and therefore, there may still be a need to study other relevant variables to determine whether they give the same findings as the ones found here.

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